

requirement to submit formal drawings be deferred until the proposed drawing corrections have been accepted and the application is otherwise considered to be in condition for allowance.

The specification has been amended to adopt the suggestion made by the Examiner in the first line on page 3 of the Official Action. The specification has also been amended to address the informalities noted by the Examiner in the last paragraph on page 3 of the Official Action, in that the specification has been amended to assign sequence identifiers to the sequences depicted in Fig. 10 of the drawings. The specification has further been amended to assure correspondence between the figure descriptions and the drawings after correction of the drawings to address the draftsperson's objection to the numbering of the figures. With respect to the Examiner's requirement on page 4 of the Official Action for a statement of identity as between the amended copy of the sequence listing and the computer readable form copy of the sequence listing, Applicants respectfully call the Examiner's attention to the statement filed December 17, 1999 (copy submitted herewith along with stamped postcard receipt).

It is noted that the amendment to the figure descriptions (discussed above) will necessitate a further amendment to the Sequence Listing to add sequences. Applicants respectfully request that a requirement for such amendment be deferred until the application is otherwise considered to be in condition for allowance. Applicants will submit a further statement of identity of the paper copy and computer readable form copy with the amended sequence listing submitted in response to such requirement.

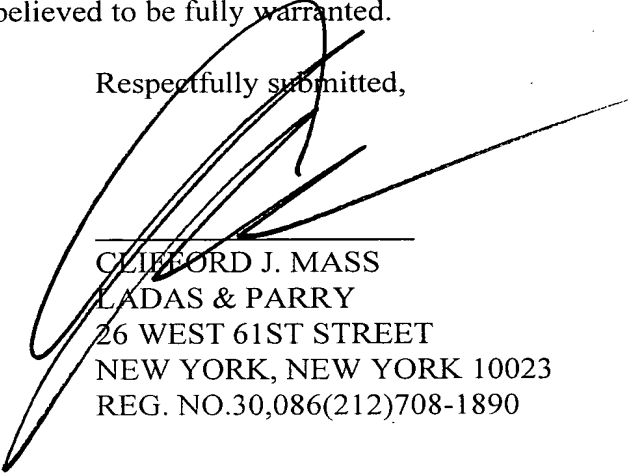
Claims 59 and 60 have been amended in the manner courteously suggested by

the Examiner at page 4, last full paragraph, and page 6, last full paragraph, of the Official Action. The amendments to these claims are believed to remove the bases for rejection of these claims under 35 USC 101 and 35 USC 112, second paragraph.

Claim 51 has also been amended in the manner courteously suggested by the Examiner and with the recitations that the recited muteins have antifungal activity. Basis for these latter recitations can be found in the definition of "muteins" in the specification at page 11, lines 5-8, wherein it is stated that the muteins retain their antifungal activity. The amendments to claim 51 are believed to remove the basis for the Examiner's rejection of this claim in accordance with the Examiner's comments. All claims as amended are believed to be sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

In view of the above, all objections and rejections of record are believed to have been overcome. An early and favorable reconsideration of the application as amended is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,



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IN THE SPECIFICATION:

Page 8, paragraph beginning on line 7, please amend as follows:

Figure 6A: [Figure 6: (A).] SD 75 gelfiltration profile of WL64. WL64 eluates at fractions 13, 14, 15. Molecular weight markers are indicated above the arrows at the top of the plot. X-axis: fraction number. Y-axis: A280.

Figure 6B: [(B)] Coomassie stained 12.5% SDS-PAGE gel of fractions 11-17 of the SD 75 gelfiltration profile. Molecular weight markers are indicated on the right and are in kDa. The protein bands that correlate with antifungal activity are indicated between the arrows.

Figure 6C: [(C)] *In vitro* antifungal assay. Ten microlitres of the respective fractions (500 µl total) were used to screen the growth inhibition of *Rhizoctonia solani* hyphal fragments.

Page 8, paragraph beginning at line 24, please amend as follows:

Figure 8A: [Figure 8: (A).] Lineweaver-Burk plot of MS59 (open diamonds), WL64 (closed circles), and GOX (open squares) oxidase activities with glucose as substrate. Amounts of protein per assay were 17, 29, and 45 ng for MS59, WL64 and GOX respectively.

Figure 8B: [(B)] Lineweaver-Burk plot of MS59 (open diamonds), WL64 (closed circles), and GOX (open squares) oxidase activities with fungal cell walls as substrate. Amounts of protein per assay were 17, 29, and 225 ng for MS59, WL64 and GOX respectively.

Page 9, first paragraph, please amend as follows:

Figures 10 A and B: [Figure 10:] Alignment of the proteins of the invention MS59 (SEQ ID NO: 16), WL64 (SEQ ID NO: 58) and the two homologues from *A. thaliana* At26 (SEQ ID NO: 71) and At27 (SEQ ID NO: 75) (with the known berberine bridge enzymes (EcBBE (SEQ ID NO: 76) and PsBBE (SEQ ID NO: 77)). Conserved changes are denoted in gray, while areas of identity (3 of the 6 amino acids identical) are given in black.

IN THE CLAIMS:

Claim 51 (twice amended) An isolated protein comprising

(a) an amino acid sequence encoded by SEQ ID NO 15 which has [and having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 15 wherein said mutein has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 15 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 15]; or a part of the amino acid sequence of SEQ ID NO 15 having antifungal activity; or

(b) an amino acid sequence encoded by SEQ ID NO 19 which has [and having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 19 wherein said mutein of the amino acid sequence encoded by SEQ ID NO 19 has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 19 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 19]; or a part of the amino acid sequence of SEQ ID NO 19 having antifungal

activity; or

(c) an amino acid sequence encoded by SEQ ID NO 57 which has [and having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 57 wherein said mutein of the amino acid sequence encoded by SEQ ID NO 57 has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 57 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 57]; or a part of the amino acid sequence of SEQ ID NO 57 having antifungal activity; or

(d) an amino acid sequence encoded by SEQ ID NO 70 which has [and having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 70 wherein said mutein of the amino acid sequence encoded by SEQ ID NO 70 has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 70 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 70]; or a part of the amino acid sequence of SEQ ID NO 70 having antifungal activity; or

(e) an amino acid sequence encoded by SEQ ID NO 72 which has [and having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 72 wherein said mutein of the amino acid sequence encoded by SEQ ID NO 72 has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 72 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 72]; or a part of the amino acid sequence of SEQ ID NO 72 having antifungal activity; or

(f) an amino acid sequence encoded by SEQ ID NO. 74 which has [and

having an] antifungal activity; or a mutein of the amino acid sequence encoded by SEQ ID NO 74 wherein said mutein of the amino acid sequence encoded by SEQ ID NO 74 has antifungal activity [having sufficient identity to the amino acid sequence of SEQ ID NO 74 to retain the antifungal activity of the amino acid sequence of SEQ ID NO 74]; or a part of the amino acid sequences of SEQ ID NO 74 havign antifungal activity, wherein the muteins in subparagraphs (a) - (f) differ from the respective amino acid sequences of which they are muteins only by the replacement, addition or deletion of one amino acid.

Claim 59 (amended) An isolated antifungal protein comprising the [an] amino acid sequence encoded by the open reading frame of SEQ ID NO 15 or a part of said amino acid sequence having antifungal activity.

Claim 60 (amended) An isolated antifungal protein comprising the [an] amino acid sequence encoded by the open reading frame represented by SEQ ID NO 19 or a part of said amino acid sequence having antifungal activity.